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Six Sigma in the management of laser-assisted dental practices

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Every organisation has to have a source of income in order to stay in business. Thus, dentistry is facing the same challenge as businesses in the manufacturing industry are. This challenge is being profitable at what the company is doing. Without a proper focus on the financial aspects, which are, indeed, the key performance indicator, the management of the organisation will drift to trivial, unproductive issues.

The Six Sigma principles

Commitment

Persistence and diligence are the two underlying keys for the success of any business idea. Knowledge gained must be shared among those that are involved in the application. This is the reason the Six Sigma philosophy says that there is no "I" in the "team". It is always about "we" moving ahead together.

When the master black belt executes the project, the rest of the team needs to be incorporated in order to understand and pursue the same principles and objectives. Six Sigma brings in a breakthrough change that then needs to be incorporated as a lasting strategy in order to gain long-term results. At least two years of commitment are documented to be essential in order to see the development of work. The most common cause of organisations failing at Six Sigma application is a lack of commitment to true process improvement.

The entire team that is on board for Six Sigma must be trained to carry out the implementation of the tools learnt, the process charters and the improvement strategies—even after the project is over. Commitment to Six Sigma needs to be long term in order to see the continual improvement.

Unique selling proposition (USP)

The USP of Six Sigma is: "Do the right thing first the very first time." Anything else is considered to be a waste and a non-value-added service that does not improve the financial inputs of the organisation. According to lean principles, any form of waste, or "*muda*" (Japanese for "futility") should be eliminated from the service or manufacturing company in order to generate revenue from the existing resources.

In dental practice, *muda* may include the following:

- retreatment of cases with no extra payment;
- improper use of material and dental supplies;
- front desk staff not scheduling recalls or poor appointment scheduling systems;
- improper use of existing data from patients;
- lack of team spirit, which lowers interteam referrals;
- referring patients outside the practice brings the market value of the clinic down, especially if it is a multi-specialty practice; and
- inadequate use of the marketing team.

Muda in all of these situations can be extensive, as a great deal is spent on building up the patient base of the practice. Reverting the order of this and then taking steps to rebuild is a classic example of *muda* in dental practice. *Muda* should be avoided at all times in order to improve the financial inputs of the company.

Philosophy

The key philosophy of Six Sigma is that each company whether it is manufacturing cars or healthy teeth, can be considered a process. A process has two components: input and output. If inputs are controlled, outputs are controlled automatically. This is generally expressed as the $y = f(x)$ concept. According to Six Sigma, any process can be defined, measured, analysed, improved and controlled (DMAIC).

Set of tools

Six Sigma works with multiple sets of tools. A few of them applicable to dental practice are control charts, failure mode and effect analysis, and process mapping.

Methodology

DMAIC defines the steps that the Six Sigma practitioner has to follow in the organisation. It starts with identifying the problem and ends with implementation of long-lasting solutions.

Metrics

Six Sigma quality performances mean 3.4 defects per million opportunities, accounting for a 1.5 sigma shift in the mean. The idea is to reduce the variation in the process.

Implementation of the Six Sigma principles in laser-assisted dental practices

The DMAIC model of Six Sigma needs time and resources for implementation. Parallel support from all the units in the organisation is essential for the accomplishment of the Six Sigma project, in terms of having the information technology group supply the data and the financial unit give data in the form of cost of quality analysis.

The DMAIC model can be applied to the dental clinic as follows:

Define

There can be no solution if the problem is not known. The most pivotal part of Six Sigma is defining the problem in a specific manner. It involves the proper study of the whys and hows of the problem. In a dental practice, one of the key concerns can be the flow of patients. There is a certain amount of focus on establishing an inflow of new patients, but there can be a substantial amount of market that can be created with the existing data. When it comes to controlling the outflow of cash from the office, inventory control can also be looked into. Specific concerns can only be addressed if the problem has been well defined.

Measure

As Robin Sharma, the author of the multiple award-winning book *The Monk who Sold his Ferrari*, stated, "What gets measured gets improved". In order to measure the defined problem, the practice needs to look into specific and relevant data. Six Sigma focuses on collecting the required data with check sheets, Pareto charts, histograms, scatter diagrams and many other tools. The collected data can be helpful in establishing the amount of variation. In the measure phase, a current baseline is set up for the purpose of later reference.

Analyse

Analysis of the data, either with experimental measures or with audits, helps to rule out the root of the existing problem. Once a definitive, measurable figure can be given to the problem, it becomes easy to work towards the solution.

Improve

The improve phase of the problem requires the conduction of failure mode and effect analysis (FMEA). FMEA is the road map to figuring out all the possible modes of failure and then working backwards in order to avoid them or find solutions in case they still occur.

FMEA is a very helpful tool, as it allows a 360° evaluation of the possible failures in the project. Once the problems that could potentially occur become evident, the idea is to have the exit strategy or solutions already in advance. These backward steps from the possible failures prepare the team to execute the project better.



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sustainable, the organisation must follow the DMAIC model and celebrate the success at the end. Once one phase has been completed, it is good to start all over again for continual improvement, and this is then conducted with a plan-do-study-act cycle.

Conclusion

Any organisation that has an improvement-based corporate culture will imbibe the DMAIC philosophy of Six Sigma and will be consistently able to improve and eliminate problems. If, however, on the other hand, an organisation becomes trapped in the pitfalls of difficult situations or mired in bureaucracy, it could lose its edge and reduce its overall effectiveness and motivation to improve.

Control

Once the Six Sigma steps have been brought forward and executed, it is absolutely important that the entire team participates and keeps the measures taken in place. Many organisations execute Six Sigma, but the problems return, as the system itself does not generate Six Sigma unless the people who operate the system have completely adopted it. There must always be a dynamic control plan, including a mistake proofing approach, process behaviour charts and updating of lessons learnt.

Six Sigma road map

The Six Sigma journey is a breakthrough and not a continual improvement. In order to make the system

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Kurz & bündig

Six Sigma als Managementsystem dient der kontinuierlichen Prozessverbesserung und Qualitätssteigerung. Die Philosophie des Six Sigma sieht jedes Unternehmen, ob Industrie oder Dienstleister, als Prozess, welcher definiert, gemessen, analysiert, verbessert und kontrolliert (defined, measured, analysed, improved, controlled = DMAIC) werden kann. Jedes erfolgsorientierte Unternehmen kann von dieser DMAIC-Methode profitieren. Die Autorin stellt die sechs wichtigsten Prinzipien des Six Sigma dar und erläutert im Folgenden, wie diese sowie die DMAIC-Methode in der zahnärztlichen Praxis Anwendung finden können. Ein bleibendes Engagement ist entscheidend, mindestens zwei Jahre sollten für die erfolgreiche Implementierung angedacht sein und die Strategie dauerhaft inkorporiert werden, um langfristige Ergebnisse zu erzielen. Dinge von Beginn an richtig zu machen, gilt als USP des Six Sigma; so sollen keine Ressourcen für sogenanntes *muda* (japanisch für „sinnlose Tätigkeit") verschwendet werden.

Ziele der Prozessoptimierungen sind eine kontinuierliche Verbesserung und Eliminierung von Problemen. Dabei ist es besonders wichtig, dass alle Teammitglieder über den gleichen Wissensstand verfügen und gemeinsam in die gewünschte Richtung arbeiten. Austausch und gegenseitige Unterstützung zwischen allen Unternehmenseinheiten sind dabei unerlässlich. Um die Qualität langfristig zu steigern, müssen Erfolge zwar gefeiert, optimierte Prozesse jedoch auch stets erneut der DMAIC-Methode unterzogen werden.